

Notice of Allowability

Application No.

10/090,150

Examiner

Jaydi A. Aguirrechea

Applicant(s)

IKEDA ET AL.

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Election filed on 10/14/03.
 2. ☒ The allowed claim(s) is/are 1-18.
 3. ☒ The drawings filed on 05 March 2002 are accepted by the Examiner.
 4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- * Certified copies not received: _____.
5. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 - (a) ☐ The translation of the foreign language provisional application has been received.
 6. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

7. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
8. ☐ CORRECTED DRAWINGS must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No. _____.
 - (b) ☐ including changes required by the proposed drawing correction filed _____, which has been approved by the Examiner.
 - (c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet.

9. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1 <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 2 <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3 <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 4 <input type="checkbox"/> Interview Summary (PTO-413), Paper No. _____. |
| 5 <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449), Paper No. _____. | 6 <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 7 <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | 8 <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9 <input type="checkbox"/> Other |

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

- Cancel claims 19-22.

Election/Restrictions

2. This application is in condition for allowance except for the presence of claims 19-22 to an invention non-elected without traverse. Accordingly, claims 19-22 have been cancelled.

Allowable Subject Matter

3. Claims 1-18 allowed.

4. The following is an examiner's statement of reasons for allowance: The prior art of record fails to teach either alone or in obvious combination a piezoelectric resonator comprising a piezoelectric element the temperature coefficient ϵ_{TC} of the capacitance of the piezoelectric material, the bandwidth ratio $\Delta f/f_0$, the temperature coefficient F_{RTC} of the resonance frequency, the temperature coefficient F_{ATC} of the anti-resonance frequency, and a target value α for the temperature coefficient of the center frequency satisfy the expression:

$$\left[\left(\frac{F_{RTC} + F_{ATC}}{2} \right) + K \times \epsilon_n \times \left(\frac{\Delta f}{f_0} \right) \right] \leq \alpha$$

wherewith K is a coefficient determined according to the impedance at the midpoint between F_r and A a coefficient of +1 for a positive temperature coefficient and -1 for a negative temperature coefficient;

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$F_a, \epsilon_{TC} = A \times (\text{the amount of change in capacitance in a measured temperature range}) / (\text{the capacitance at a reference temperature} \times \text{the measured temperature range});$

$\Delta f / f_o = (F_a \text{ at the reference temperature} - F_r \text{ at the reference temperature}) / (f_o \text{ at the reference temperature}); F_{TC} = A \times (\text{the amount of change in } F_r \text{ in the measured temperature range}) / (F_r \text{ at the reference temperature} \times \text{the measured temperature range});$

$F_{TC} = A \times (\text{the amount of change in } F_a \text{ in the measured temperature range}) / (F_a \text{ at the reference temperature} \times \text{the measured temperature range}).$

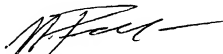
Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jaydi A. Aguirrechea whose telephone number is 703-305-2277. The examiner can normally be reached on M-Th 9-7.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 703-308-1371. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

JAA
10/30/03



Nicholas Ponomarenko
Primary Examiner
Technology Center 2800